

What is claimed is:

1. A method of transferring data from a controller to an output device, comprising:

5 providing input data that describes a firing pattern for an array of ink nozzles, the input data having a first portion and a second portion, the first portion being disposed in a first pattern and the second portion being disposed in a second pattern that is at least substantially complementary to the first pattern;

removing the second portion of the input data so that the input data is compressed; and

10 sending intermediate data corresponding to the compressed input data to the output device;

wherein the output device expands the intermediate data at the output device based on at least one of the first and second patterns.

15 2. The method of claim 1, wherein providing includes selecting the first portion, and wherein selecting, removing, and sending are conducted a plurality of times to resolve the input data into a plurality of different portions configured to specify interlaced patterns of an output.

20 3. The method of claim 1, wherein the output device expands the intermediate data by inserting invalid data elements into the intermediate data based on a predefined mask that specifies the invalid data elements.

25 4. The method of claim 1, wherein the compressed input data includes a set of data elements having associated values, the set having a size corresponding to a total number of the data elements in the set,

the method further comprising producing the intermediate data from the compressed input data by at least one of changing the size of the set, transforming one or more of the associated values, and further compressing the  
30 compressed input data.

5. The method of claim 1, wherein the output device expands the intermediate data so that the intermediate data is disposed in a third pattern, the third pattern being related to but different from the first pattern.

5 6. The method of claim 1, wherein removing provides a first compression of the input data, the method further comprising performing a second compression of the input data before sending.

10 7. The method of claim 1, wherein removing the second portion includes masking the second portion using a mask so that the first portion is unmasked.

15 8. The method of claim 1, wherein sending the intermediate data includes sending the compressed input data without modification to the output device.

9. The method of claim 1, wherein the output device is a printing device, and wherein providing, removing, and sending are conducted by a controller that is separate from the printing device.

10. A method of transferring data for printing, comprising:  
providing print data at a controller, the print data having a plurality of data elements specifying positions for colorant placement onto print media by a printing device;  
5 applying a mask to the print data to specify an invalid portion of the data elements;  
removing the specified invalid portion of the data elements from the print data to compress the print data; and  
sending intermediate data corresponding to the compressed print data to  
10 the printing device from the controller;  
wherein the printing device expands the intermediate data based on the mask; and  
wherein the printing device prints at least a subset of the expanded intermediate data.

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11. The method of claim 10, wherein the printing device has a printhead with an array of nozzles, wherein applying the mask further specifies a remaining valid portion that defines a firing arrangement for a subset of the nozzles, and wherein the printing device prints the subset of the expanded intermediate data  
20 by ejecting ink droplets from the array of nozzles onto the print media according to the firing arrangement.

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12. The method of claim 11, wherein the data elements of the print data have values, the method further comprising changing the values of at least a subset of the valid portion before sending.

13. The method of claim 10, wherein applying, removing, and sending are conducted a number of times on the print data to produce a corresponding number of interlaced patterns of printed output.

14. The method of claim 10, wherein the printing device is configured to expand the intermediate data by inserting invalid data elements into the intermediate data based on the mask.

5       15. The method of claim 10, wherein the data elements of the invalid portion are present a number of times and have associated values, the method further comprising producing the intermediate data by at least one of changing the number, changing at least a subset of the associated values, and further compressing the compressed print data.

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16. The method of claim 10, wherein the printing device expands the intermediate data by disposing the intermediate data in a pattern, the pattern being defined by the mask.

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17. The method of claim 10, wherein removing provides a first compression, the method further comprising performing a second compression of the compressed print data before sending.

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18. A system for transferring print data to a printing device, comprising:  
a controller configured to select a first portion of print data disposed in a first pattern and to remove a second portion of the print data disposed in a second pattern that is complementary to the first pattern so that the print data is compressed; and

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a printing device configured to receive intermediate data corresponding to the compressed print data and to expand the intermediate data based on at least one of the first and second patterns, the printing device being configured further to print at least a subset of the expanded intermediate data.

19. The system of claim 18, wherein the printing device is an inkjet printing device.

20. The system of claim 18, wherein the printing device is configured to  
5 expand the intermediate data by inserting data elements into the intermediate data based on the second pattern.

21. A printing device for printing expanded data produced from intermediate data received from a controller, the intermediate data corresponding  
10 to print data that is compressed by retaining a first portion of the print data disposed in a first pattern and removing a second portion of the print data disposed in a second pattern that is complementary to the first pattern, the printing device comprising:

a processor configured to receive the intermediate data and to expand the  
15 intermediate data based on at least one of the first and second patterns; and

a colorant delivery mechanism coupled with the processor and configured to deliver colorant to print media according to the intermediate data after such intermediate data is expanded by the processor.

20 22. The printing device of claim 21, further comprising expansion instructions that instruct the processor in expanding the intermediate data based on the at least one pattern.

23. A program storage device readable by a processor, tangibly embodying a program of instructions executable by the processor to perform method steps for transferring data from a controller to an output device, the method steps comprising:

- 5 providing input data having a first portion and a second portion, the first portion being disposed in a first pattern and the second portion being disposed in a second pattern that is at least substantially complementary to the first pattern;
- removing the second portion of the input data so that the input data is compressed;
- 10 sending intermediate data corresponding to the compressed input data to the output device; and
- expanding the intermediate data at the output device based on at least one of the first and second patterns.

- 15 24. A method of transmitting data to a printing device, comprising:
  - providing a first array of M X N print data elements;
  - applying a predefined mask to the first array so as to create a second array of M X N print data elements, the second array including a valid portion and an invalid portion; and
  - 20 transmitting the valid portion to a printing device,
    - wherein the printing device uses a copy of the predefined mask to convert the valid portion into a third array of M X N print data elements, and
    - wherein the printing device generates printed output according to the third array of print data elements.

25. The method of claim 24, wherein the third array of print data elements describes a firing pattern for an  $M \times N$  array of ink nozzles in the printing device.

5 26. The method of claim 24, wherein the printing devices retains the copy of the predefined mask in non-volatile memory local to the printing device.

27. The method of claim 24, wherein the valid portion is compressed prior to transmission to the printing device.

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28. The method of claim 24, wherein  $M$  is equal to  $N$ .